2. The Electrical Resistivity of Quenched Beta-brass

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resistivity measurements using cold worked polycrystalline 5-nine Al and dilute Al alloys with Ag, Mg, Ge, Ti, Cu and Si. In the initial recovery stage, up to about 50 K, there is no remarkable difference in the recovery rates between alloys and pure Al. The following recovery stage, so-called stage II_C, is affected significantly by existence of impurities. The suppressive effect of impurities on migrating defects depends on the kind of impurity elements and is in the order, Ge>Si>Cu≧Ag>Mg. By comparison this effect with that of impurities for self-interstitial atoms and for vacancies, respectively, it finds that the effect for migrating defects in stage II_C agrees with that for vacancies. It is therefore considered that the recovery in stage II_C in deformed Al is due to the migration of di-vacancy.

2. The Electrical Resistivity of Quenched Beta-brass

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The electrical resistivity change in quenched beta-brass during isochronal annealing was examined by use of the ordinary bridge circuit. The reverse recovery appears at the temperature ranging from 100 to 150 °C. This reverse recovery is not reported yet and is considered to be responsible for a behavior of vacancies emitted from dislocation loops in the quenched specimen. Their behavior is investigated by Monte Carlo simulation and it is suggested that the life time of these vacancies until to annihilate to sinks, such as zigzag dislocations and large dislocation loops, is much longer in ordered domain than in disordered one. It is also observed by electron microscope that small dislocation loops annihilate and only large ones survive at the temperature range mentioned above.